IN THE CLAIMS:

Please cancel claims 3 and 39 without prejudice. Please replace claims 1, 34 and 42 with the following claims.

1. (amended) An apparatus for controlling fixed-length transmission unit traffic in a switch platform, the apparatus comprising at least one bi-directional first-in-first-out (FIFO) unit, wherein each bi-directional FIFO unit comprises a first and a second unidirectional FIFO buffer, wherein the first and second uni-directional FIFO buffers each comprise a bit per word programmable parameter and a word per cell programmable parameter that together correspond to the fixed length of the transmission units that the fixed length transmission unit traffic is comprised of.

34. (amended) A network switch platform comprising:

at least one service module;

at least one fixed length transmission unit bus controller coupled between the at least one service module and at least one switch;

at least one bi-directional first-in-first-out (FIFO) unit located in the at least one fixed-length transmission unit bus controller, wherein each bi-directional FIFO unit comprises a first and a second unidirectional FIFO buffer each capable of discarding an invalid fixed length transmission unit, wherein the first and second uni-directional FIFO buffers each comprise a bit per word programmable parameter and a word per cell programmable parameter that together correspond to a fixed length of the transmission units that a fixed length transmission unit flow is comprised of; and

at least one diagnostic interface, wherein the at least one diagnostic interface supports a non-destructive read of the at least one bi-directional FIFO unit

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while at least one fixed-length transmission unit is being written to and read from the at least one bi-directional FIFO unit.

42. (amended) A method for controlling fixed-length transmission unit traffic in a switch platform, the method comprising the step of transferring at least one fixed-length transmission unit among a plurality of ports having a plurality of bandwidths using a bi-directional first-in-first-out (FIFO) unit, wherein the bi-directional FIFO unit comprises a first and second unidirectional FIFO buffer, wherein the first and second uni-directional FIFO buffers each comprise a bit per word programmable parameter and a word per cell programmable parameter that together correspond to the fixed-length of the transmission units that the fixed length transmission unit traffic is comprised of.

Please add new claims 50 - 83

50. (new) An apparatus, comprising:

a bus master that controls:

1) a first bus that transports information from said bus master to one or more service modules that are coupled to said first bus;

2) a second bus that transports information from said one or more service modules to said bus master, said one or more service modules also coupled to said second bus, each of said service modules providing a networking interface,

said bus master further comprising:

a) a transmission output to said first bus that transmits egress information in fixed size portions to any of said service modules;

b) a reception input from said second bus that receives ingress information in fixed size portions from any of said service modules;

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c) an egress first-in-first-out (FIFO) buffer that enqueues words from which said fixed size portions of egress information are comprised, said egress FIFO buffer further comprising:

1) an output from which said fixed size portions of egress information flow to said transmission output;

2) an input at which said fixed size portions of egress information are received, each of said fixed size portions of egress information including, when received at said input, a label that identifies which of said service modules a particular fixed size portion of egress information is to be sent to;

3) a programmable bit per word size;

4) a programmable word per egress cell size, wherein, said bit per word size and said word per egress cell size together correspond to said fixed size of said portions of egress information; and

d) an ingress first-in-first-out (FIFO) buffer that enqueues words from which said fixed size portions of ingress information are comprised, said ingress FIFO buffer further comprising:

1) an output from which said fixed size portions of ingress information flow;

2) an input to which said fixed size portions of ingress information flow from said reception input, each of said fixed size portions of ingress information including, when received at said reception input, a label that identifies which of said service modules a particular fixed size portion of ingress information is being sent from;

3) a programmable bit per word size;

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4) a programmable word per ingress cell size, wherein said bit per word size and said word per ingress cell size together correspond to said fixed size of said portions of egress information.

51. (new) The apparatus of claim 50 wherein one of said service modules can be used to provide Frame Relay service.

52. (new) The apparatus of claim 51 wherein said one of said service modules has a T1 networking interface.

53. (new) The apparatus of claim 50 wherein one of said service modules can be used to provide ATM service.

54. (new) The apparatus of claim 53 wherein said one of said service modules has a T1 networking interface.

55. (new) The apparatus of claim 50 wherein said fixed size of said portions of egress information is the same as said fixed size of said portions of ingress information.

56. (new) The apparatus of claim 55 wherein said fixed size further comprises 56 bytes.

57. (new) The apparatus of claim 50 wherein said egress FIFO buffer further comprises a first counter that counts the number of words that have been stored into said egress FIFO buffer at said egress FIFO buffer input.

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58. (new) The apparatus of claim 57 wherein said egress FIFO buffer further comprises a first reset value to which said first counter is set if said first counter reaches said word per egress cell size.

59. (new) The apparatus of claim 57 wherein said egress FIFO buffer further comprises a second counter that counts the number of words that have been removed from said egress FIFO buffer at said egress FIFO buffer output.

60. (new) The apparatus of claim 59 wherein said egress FIFO buffer further comprises a second reset value to which said second counter is set if said second counter reaches said word per egress cell size.

61. (new) The apparatus of claim 59 wherein said egress FIFO buffer further comprises a third counter and a fourth counter that each:

    1) increment in value if said first counter reaches said word per egress cell size; and

    2) decrement in value if said second counter reaches said word per egress cell size.

62. (new) The apparatus of claim 61 wherein said third counter is within the domain of a first clock that times the removal of words from said egress FIFO buffer and wherein said fourth counter is within the domain of a second clock that times the storing of words into said egress FIFO buffer.

63. (new) The apparatus of claim 50 wherein said ingress FIFO buffer further comprises a first counter that counts the number of words that have been stored into said ingress FIFO buffer at said ingress FIFO buffer input.

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64. (new) The apparatus of claim 63 wherein said ingress FIFO buffer further comprises a first reset value to which said first counter is set if said first counter reaches said word per ingress cell size.

65. (new) The apparatus of claim 63 wherein said ingress FIFO buffer further comprises a second counter that counts the number of words that have been removed from said ingress FIFO buffer at said ingress FIFO buffer output.

66. (new) The apparatus of claim 65 wherein said ingress FIFO buffer further comprises a second reset value to which said second counter is set if said second counter reaches said word per ingress cell size.

67. (new) The apparatus of claim 65 wherein said ingress FIFO buffer further comprises a third counter and a fourth counter that each:

1) increment in value if said first counter reaches said word per ingress cell size; and

2) decrement in value if said second counter reaches said word per ingress cell size.

68. (new) The apparatus of claim 67 wherein said third counter is within the domain of a first clock that times the storing of words into said ingress FIFO buffer and wherein said fourth counter is within the domain of a second clock that times the removal of words from said ingress FIFO buffer.

69. (new) A method, comprising:

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programming a bit per word size parameter for an egress first-in-first-out (FIFO) buffer and programming a word per egress cell size parameter for said egress FIFO buffer;

programming a bit per word size parameter for an ingress first-in-first-out (FIFO) buffer and programming a word per ingress cell size parameter for said ingress FIFO buffer;

sending fixed size portions of egress information from said egress FIFO buffer over a first bus to any of a plurality of service modules that are coupled to said first bus, said egress FIFO's programmed bit per word size parameter and word per egress cell size parameter together corresponding to said fixed size of said portions of egress data, each of said fixed size portions of egress information further comprising a label that identifies which service module a particular fixed size portion of egress information is sent to; and

sending fixed size portions of ingress information from any of said plurality of service modules over a second bus to said ingress FIFO buffer, said ingress FIFO's programmed bit per word size parameter and word per egress cell size parameter together corresponding to said fixed size of said portions of ingress data, each of said fixed size portions of ingress information further comprising a label that identifies from which service module a particular fixed size portion of ingress information was sent.

70. (new) The method of claim 69 wherein said fixed size of said portions of egress information is the same as said fixed size of said portions of ingress information.

71. (new) The method of claim 70 wherein said fixed size further comprises 56 bytes.

72. (new) The method of claim 69 further comprising counting, with a first count value, the number of words that have been stored into said egress FIFO buffer.

73. (new) The method of claim 72 further comprising resetting said first count value to a first reset value if said first count value reaches said word per egress cell size.

74. (new) The method of claim 72 further comprising counting, with a second count value, the number of words that have been removed from said egress FIFO buffer.

75. (new) The method of claim 74 further comprising resetting said second count value to a second reset value if said second count value reaches said word per egress cell size.

76. (new) The method of claim 74 further comprising counting with a third count value and counting with a fourth count value, said counting with a third and fourth count values further comprising:

1) incrementing said third and fourth count values if said first count value reaches said word per egress cell size; and

2) decrementing said third and fourth count values if said second count value reaches said word per egress cell size.

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77. (new) The method of claim 76 wherein said counting with a third count value is timed with a first clock that times the removal of words from said egress FIFO buffer and wherein said counting with a fourth count value is timed with a second clock that times the storing of words into said egress FIFO buffer.

78. (new) The method of claim 69 further comprising counting, with a first count value, the number of words that have been stored into said ingress FIFO buffer.

79. (new) The method of claim 78 further comprising resetting said first count value to a first reset value if said first count value reaches said word per ingress cell size.

80. (new) The method of claim 78 further comprising counting, with a second count value, the number of words that have been removed from said ingress FIFO buffer.

81. (new) The method of claim 80 further comprising resetting said second count value to a second reset value if said second count value reaches said word per ingress cell size.

82. (new) The method of claim 80 further comprising counting with a third count value and counting with a fourth count value, said counting with a third and fourth count values further comprising:

1) incrementing said third and fourth count values if said first count value reaches said word per ingress cell size; and

2) decrementing said third and fourth count values if said second count values reaches said word per ingress cell size.

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83. (new)   The method of claim 82 wherein said counting with a third count value is timed with a first clock that times the storing of words into said ingress FIFO buffer and wherein said counting with a fourth count value is timed with a second clock that times the removal of words from said ingress FIFO buffer.

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Comments

The enclosed is responsive to the Examiner's Office Action mailed on January 3, 2002. At the time the Examiner mailed the Office Action, claims 1 -49 were pending. In response, the Applicant has: 1) canceled claims 3 and 39; 2) amended claims 1, 34 and 42; and 3) added new claims 50 - 83. As such, claims 1,2, 4-38, and 40-83 are currently pending. The Applicant respectfully requests reconsideration of the present application and the allowance of claims 1,2, 4-38, and 40-83.

The Examiner rejected independent claims 1, 34, and 42 under 35 USC 112 first paragraph as containing subject matter which was not described in the specification in such a way as to reasonable convey to one skilled in the art that the inventor(s), at the time the application was filed, has possession of the claimed invention. In particular, the Examiner rejected to the Applicant's use of the phraseology "a software programmable parameter changeable by the user without the need to change existing hardware". In response, the Applicant has removed this matter from claims 1, 34, and 42. As such, independent claims 1, 34, and 42 and the dependent claims that depend from them have been amended so as to overcome the Examiner's 35 USC 112 first paragraph rejection.

The Examiner rejected independent claims 1 and 42 under 35 USC 103 as being unpatentable over US Patent No. 5,940,368 (hereinafter, "Takamichi") and US Patent No. 5,406,554 (hereinafter, "Parry"). In response the Applicant has amended claims 1 and 42 to include a "bit per word programmable parameter" and a "word per cell programmable parameter" that together "correspond to the fixed length of the transmission units that the fixed length transmission unit traffic is comprised of". Here,

at a minimum, the combination of Takamichi and Parry fails to teach or suggest a "bit per word programmable parameter" and a "word per cell programmable parameter" and that their combination corresponds to "the fixed length of the transmission units that the fixed length transmission unit traffic is comprised of". As such indpendent claims 1 and 42 have been amended so as to overcome the Examiner's 35 USC 103 rejection.

As such independent claims 1, 34 and 42 are presently allowable. Because independent claims 1, 34, and 42 are presently allowable, the claims that depend from them (claims 2, 4-33, 35-38, and 40-49) are also allowable; and, the Examiner's rejections to these dependent claims as stated in the Office Action mailed on Januray 3, 2002 are presently moot.
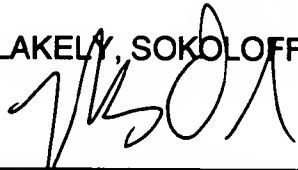
As such the Applicant believes claims 1,2, 4-38, and 40-49 are presently in allowable form and respectfully requests their reconsideration and allowance. The applicant similarly believes new claims 50-83 are also allowable and therefore also respectfully requests their consideration and allowance.

If there are any additional charges, please charge them to our Deposit Account Number 02-2666. If a telephone conference would facilitate the prosecution of this application, the Examiner is invited to contact Robert B. O'Rourke at (408) 720-8300.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: ___5/2___, 2002

_____
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CHANGES TO CLAIMS SHOWING AMENDMENTS

Please cancel claims 3 and 39 without prejudice. Please amend claims 1, 34 and 42 as follows.

1. (amended) An apparatus for controlling fixed-length transmission unit traffic in a switch platform, the apparatus comprising at least one bi-directional first-in-first-out (FIFO) unit, wherein each bi-directional FIFO unit comprises a first and a second unidirectional FIFO buffer, wherein <u>the first and second uni-directional FIFO buffers each comprise a bit per word programmable parameter and a word per cell programmable parameter that together correspond to the fixed length of [a fixed length]the</u> transmission unit<u>s that the fixed length transmission unit traffic is comprised of[size of the first and second unidirectional FIFO buffers comprises a software programmable parameter changeable by the user without the need to change existing harware].

34. (amended) A network switch platform comprising:

at least one service module;

at least one fixed length transmission unit bus controller coupled [among]<u>between</u> the at least one service module and at least one switch;

at least one bi-directional first-in-first-out (FIFO) unit located in the at least one [service module and the at least one] fixed-length transmission unit bus controller, wherein each bi-directional FIFO unit comprises a first and a second unidirectional FIFO buffer each capable of discarding an invalid fixed length transmission unit, wherein<u> the first and second uni-directional FIFO buffers each comprise a bit per word programmable parameter and a word per cell programmable parameter that together correspond to a fixed length of</u> [a fixed length]<u>the</u> transmission unit<u>s that a fixed length transmission unit flow is comprised of[</u> size of the first and second unidirectional FIFO

buffers comprises a software programmable parameter changeable by the user without the need to change existing hardware]; and

at least one diagnostic interface, wherein the at least one diagnostic interface supports a non-destructive read of the at least one bi-directional FIFO unit while at least one fixed-length transmission unit is being written to and read from the at least one bi-directional FIFO unit.

42. (amended) A method for controlling fixed-length transmission unit traffic in a switch platform, the method comprising the step of transferring at least one fixed-length transmission unit among a plurality of ports having a plurality of bandwidths using a bi-directional first-in-first-out (FIFO) unit, wherein the bi-directional FIFO unit comprises a first and second unidirectional FIFO buffer, wherein the first and second uni-directional FIFO buffers each comprise a bit per word programmable parameter and a word per cell programmable parameter that together correspond to the fixed-length of the transmission units that the fixed length transmission unit traffic is comprised of [having a software programmable fixed-length transmission unit size changeable by the user without the need to change existing hardware].

Please add new claims 50 - 83

50. (new) An apparatus, comprising:

a bus master that controls:

1) a first bus that transports information from said bus master to one or more service modules that are coupled to said first bus;

2) a second bus that transports information from said one or more service modules to said bus master, said one or more service modules also

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coupled to said second bus, each of said service modules providing a networking interface,

said bus master further comprising:

a) a transmission output to said first bus that transmits egress information in fixed size portions to any of said service modules;

b) a reception input from said second bus that receives ingress information in fixed size portions from any of said service modules;

c) an egress first-in-first-out (FIFO) buffer that enqueues words from which said fixed size portions of egress information are comprised, said egress FIFO buffer further comprising:

1) an output from which said fixed size portions of egress information flow to said transmission output;

2) an input at which said fixed size portions of egress information are received, each of said fixed size portions of egress information including, when received at said input, a label that identifies which of said service modules a particular fixed size portion of egress information is to be sent to;

3) a programmable bit per word size;

4) a programmable word per egress cell size, wherein, said bit per word size and said word per egress cell size together correspond to said fixed size of said portions of egress information; and

d) an ingress first-in-first-out (FIFO) buffer that enqueues words from which said fixed size portions of ingress information are comprised, said ingress FIFO buffer further comprising:

1) an output from which said fixed size portions of ingress information flow;

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2) an input to which said fixed size portions of ingress information flow from said reception input, each of said fixed size portions of ingress information including, when received at said reception input, a label that identifies which of said service modules a particular fixed size portion of ingress information is being sent from;

3) a programmable bit per word size;

4) a programmable word per ingress cell size, wherein said bit per word size and said word per ingress cell size together correspond to said fixed size of said portions of egress information.

51. (new) The apparatus of claim 50 wherein one of said service modules can be used to provide Frame Relay service.

52. (new) The apparatus of claim 51 wherein said one of said service modules has a T1 networking interface.

53. (new) The apparatus of claim 50 wherein one of said service modules can be used to provide ATM service.

54. (new) The apparatus of claim 53 wherein said one of said service modules has a T1 networking interface.

55. (new) The apparatus of claim 50 wherein said fixed size of said portions of egress information is the same as said fixed size of said portions of ingress information.

56. (new) The apparatus of claim 55 wherein said fixed size further comprises 56 bytes.

57. (new) The apparatus of claim 50 wherein said egress FIFO buffer further comprises a first counter that counts the number of words that have been stored into said egress FIFO buffer at said egress FIFO buffer input.

58. (new) The apparatus of claim 57 wherein said egress FIFO buffer further comprises a first reset value to which said first counter is set if said first counter reaches said word per egress cell size.

59. (new) The apparatus of claim 57 wherein said egress FIFO buffer further comprises a second counter that counts the number of words that have been removed from said egress FIFO buffer at said egress FIFO buffer output.

60. (new) The apparatus of claim 59 wherein said egress FIFO buffer further comprises a second reset value to which said second counter is set if said second counter reaches said word per egress cell size.

61. (new) The apparatus of claim 59 wherein said egress FIFO buffer further comprises a third counter and a fourth counter that each:

1) increment in value if said first counter reaches said word per egress cell size; and

2) decrement in value if said second counter reaches said word per egress cell size.

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62. (new) The apparatus of claim 61 wherein said third counter is within the domain of a first clock that times the removal of words from said egress FIFO buffer and wherein said fourth counter is within the domain of a second clock that times the storing of words into said egress FIFO buffer.

63. (new) The apparatus of claim 50 wherein said ingress FIFO buffer further comprises a first counter that counts the number of words that have been stored into said ingress FIFO buffer at said ingress FIFO buffer input.

64. (new) The apparatus of claim 63 wherein said ingress FIFO buffer further comprises a first reset value to which said first counter is set if said first counter reaches said word per ingress cell size.

65. (new) The apparatus of claim 63 wherein said ingress FIFO buffer further comprises a second counter that counts the number of words that have been removed from said ingress FIFO buffer at said ingress FIFO buffer output.

66. (new) The apparatus of claim 65 wherein said ingress FIFO buffer further comprises a second reset value to which said second counter is set if said second counter reaches said word per ingress cell size.

67. (new) The apparatus of claim 65 wherein said ingress FIFO buffer further comprises a third counter and a fourth counter that each:

1) increment in value if said first counter reaches said word per ingress cell size; and

2) decrement in value if said second counter reaches said word per ingress cell size.

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68. (new) The apparatus of claim 67 wherein said third counter is within the domain of a first clock that times the storing of words into said ingress FIFO buffer and wherein said fourth counter is within the domain of a second clock that times the removal of words from said ingress FIFO buffer.

69. (new) A method, comprising:

programming a bit per word size parameter for an egress first-in-first-out (FIFO) buffer and programming a word per egress cell size parameter for said egress FIFO buffer;

programming a bit per word size parameter for an ingress first-in-first-out (FIFO) buffer and programming a word per ingress cell size parameter for said ingress FIFO buffer;

sending fixed size portions of egress information from said egress FIFO buffer over a first bus to any of a plurality of service modules that are coupled to said first bus, said egress FIFO's programmed bit per word size parameter and word per egress cell size parameter together corresponding to said fixed size of said portions of egress data, each of said fixed size portions of egress information further comprising a label that identifies which service module a particular fixed size portion of egress information is sent to; and

sending fixed size portions of ingress information from any of said plurality of service modules over a second bus to said ingress FIFO buffer, said ingress FIFO's programmed bit per word size parameter and word per egress cell size parameter

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together corresponding to said fixed size of said portions of ingress data, each of said fixed size portions of ingress information further comprising a label that identifies from which service module a particular fixed size portion of ingress information was sent.

70. (new) The method of claim 69 wherein said fixed size of said portions of egress information is the same as said fixed size of said portions of ingress information.

71. (new) The method of claim 70 wherein said fixed size further comprises 56 bytes.

72. (new) The method of claim 69 further comprising counting, with a first count value, the number of words that have been stored into said egress FIFO buffer.

73. (new) The method of claim 72 further comprising resetting said first count value to a first reset value if said first count value reaches said word per egress cell size.

74. (new) The method of claim 72 further comprising counting, with a second count value, the number of words that have been removed from said egress FIFO buffer.

75. (new) The method of claim 74 further comprising resetting said second count value to a second reset value if said second count value reaches said word per egress cell size.

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76. (new) The method of claim 74 further comprising counting with a third count value and counting with a fourth count value, said counting with a third and fourth count values further comprising:

1) incrementing said third and fourth count values if said first count value reaches said word per egress cell size; and

2) decrementing said third and fourth count values if said second count value reaches said word per egress cell size.

77. (new) The method of claim 76 wherein said counting with a third count value is timed with a first clock that times the removal of words from said egress FIFO buffer and wherein said counting with a fourth count value is timed with a second clock that times the storing of words into said egress FIFO buffer.

78. (new) The method of claim 69 further comprising counting, with a first count value, the number of words that have been stored into said ingress FIFO buffer.

79. (new) The method of claim 78 further comprising resetting said first count value to a first reset value if said first count value reaches said word per ingress cell size.

80. (new) The method of claim 78 further comprising counting, with a second count value, the number of words that have been removed from said ingress FIFO buffer.

81. (new) The method of claim 80 further comprising resetting said second count value to a second reset value if said second count value reaches said word per ingress cell size.

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82. (new) The method of claim 80 further comprising counting with a third count value and counting with a fourth count value, said counting with a third and fourth count values further comprising:

1) incrementing said third and fourth count values if said first count value reaches said word per ingress cell size; and

2) decrementing said third and fourth count values if said second count values reaches said word per ingress cell size.

83. (new) The method of claim 82 wherein said counting with a third count value is timed with a first clock that times the storing of words into said ingress FIFO buffer and wherein said counting with a fourth count value is timed with a second clock that times the removal of words from said ingress FIFO buffer.

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